

According to the Examiner

Tow shows a method of encoding data in an image using 'circularly asymmetric halftone dot patterns'. . . The dot pattern is rendered into a tiled cell block 61, producing a hard copy rendering of the image with digital data encoded thereon. . . Also, the color, size, and pixel density must be predetermined, i.e., they must have particular values selected before a cell can be created/rendered.

(February 11, 2003 Official Action at pages 2-3.)

The Examiner admits that Tow fails to show that the code is invisible and he cites Hecht in an attempt to supply a teaching of this feature. The Examiner states that Hecht shows glyphs made using inks that are virtually invisible under normal lighting conditions. Also, 'small size' can help hide the glyphs. (Id. at page 3.) The Examiner further alleges that:

it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the old and well-known glyph construction using hard-to-see inks and small size as taught by Hecht into the teachings of Tow because this allows information to be hidden in documents, fighting forgery and foiling those who might attempt to pass fraudulent documents.

(Id.)

The Examiner then admits that Tow as modified by Hecht fails to show the use of visible ink to achieve an invisible code, and he then cites Sasanuma, which purportedly shows "that a yellow ink, which is visible under certain circumstances, can be rendered 'unnoticeable.'" (Id.)

The present invention, as recited in claim 1, is directed to a method for encoding digital data in a hardcopy rendering of an invisible image defined by at least one circularly asymmetric dot pattern, said method comprising: modulating said dot pattern in accordance with said digital data; and rendering said modulated dot pattern into a tiled halftone cell of predetermined visible color and size on a recording medium,

thereby producing said hardcopy rendering of the invisible image with said digital data encoded thereon, wherein each dot pattern occupies 2% of a matrix.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be some reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure.

In this case, the prior art references fail to teach or suggest all the claim elements. Specifically, none of the cited prior art teaches, suggests or discloses at least a circularly asymmetric dot pattern wherein each dot pattern occupies 2% of a matrix. In Tow, a halftone cell (matrix) is composed of a 5 x 5 array of pixels. (Tow at col. 3, lines 50-51.) A halftone dot pattern consisting of a single pixel is 1/25th or 4% of the matrix. The reduction in pixel density from 4% to 2% is the difference between a grayscale image and an invisible image. Since Hecht and Sasanuma fail to make up for the deficiency of Tow, Applicant respectfully asserts that claim 1 is allowable over Tow in view of Hecht, and further in view of Sasanuma.

The Examiner next rejected claims 3 and 4 under 35 U.S.C. § 103(a) as unpatentable over Tow as modified by Hecht and Sasanuma as applied to claim 1 above, and further in view of U.S. Patent No. 6,250,007 to Mowry, Jr. et al. (hereinafter, Mowry) and U.S. Patent No. 6,076,738 to Bloomberg et al. (hereinafter, Bloomberg). In

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rejecting claim 3, the Examiner admits that Tow/Hecht "fails to show that the size is a 12x12 matrix" and cited Mowry and Bloomberg for allegedly teaching this feature. In rejecting claim 4, the Examiner admitted that Tow as modified by Hecht does not show that the predetermined pixel density is 2%, and he argues that Mowry allegedly shows low density glyphs. The Examiner further alleged that:

[o]n visual inspection, the filled in area in these glyphs may be around 2%. In addition, Mowry (column 6, lines 41-46) shows that a single dot may be 1/3% to around 1.2% of the total matrix so several dots as shown in figures 3 and 4 could correspond to around 2% of the matrix area.

(Id.) (emphasis added.)

A careful reading of the previous quote reveals that the Examiner is not arguing that Mowry discloses a circularly asymmetric dot pattern wherein each dot pattern occupies 2% of a matrix. According to the Examiner "Mowry shows that a single dot may be 1/3% to around 1.2% of the total matrix so several dots as shown in figures 3 and 4 could correspond to around 2% of the matrix area." (Id. at page 3.) In other words, the Examiner admits that several dots (glyphs) in Mowry could correspond to around 2% of the matrix area, but he does not argue that a single glyph occupies 2% of a matrix. According to the Examiner, Mowry teaches away from a circularly asymmetric dot pattern wherein each dot pattern occupies 2% of a matrix when he states that "Mowry shows that a single dot may be 1/3% to around 1.2% of the total matrix." Since neither Tow, Hecht, Sasanuma, Mowry, nor Bloomberg taken singly or in any reasonable combination, teaches or suggests at least a circularly asymmetric dot pattern wherein each dot pattern occupies 2% of a matrix as recited in claim 4, the section 103(a) rejection of claim 4 is improper, as claim 4 is allowable. Applicant has incorporated the recitations previously cited in former claim 4 into claim 1 and therefore

asserts that claim 1 is allowable for the same reason as claim 4 is allowable. Applicant therefore requests the Examiner withdraw the rejection of claim 3 as it depends from allowable independent claim 1.

II. Conclusion

In view of the foregoing, it is submitted that the cited prior art fails to teach or suggest the Applicant' claimed invention. Therefore, it is respectfully asserted that the present application is in condition for allowance and a notice to that effect is respectfully requested. However, if the Examiner deems that any issue remains after considering this response, he is invited to call the undersigned to expedite the prosecution and work out any such issue by telephone.

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1-3 in condition for allowance. Applicant submits that the proposed amendments to claims 1-3 do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were earlier claimed. Therefore, this Amendment should allow for immediate action by the Examiner.

Finally, Applicant submits that the entry of the Amendment would place the application in better form for appeal, should the Examiner continue to dispute the patentability of the pending claims.

Applicant, therefore, requests the entry of this Amendment, the Examiner's reconsideration of the application, and the timely allowance of the pending claims.

Attached hereto is a marked-up version of the changes made to the claims by this amendment. The attached page is captioned "Version with markings to show

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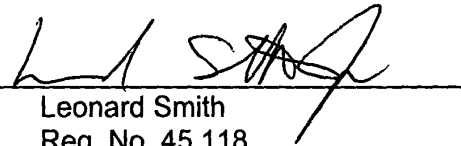
changes made." Deletions appear as normal text surrounded by [] and additions appear as underlined text.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, and not requested by attachment, such extension is hereby requested. If there are any fees due under 37 C.F.R. § 1.16 or 1.17 that are not enclosed, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge those fees to Xerox Deposit Account No. 24-0037.

Respectfully submitted,

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Dated: May 9, 2003

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend claims 1-3 as follows:

1. (Twice Amended) A method for encoding digital data in a hardcopy rendering of an invisible image defined by at least one circularly asymmetric dot pattern, said method comprising:

modulating said dot pattern in accordance with said digital data; and

rendering said modulated dot pattern into a tiled halftone cell of predetermined visible color[,] and size [and pixel density] on a recording medium, thereby producing said hardcopy rendering of the invisible image with said digital data encoded thereon, wherein each dot pattern occupies 2% of a matrix.
2. (Twice Amended) The method of claim [A1] 1, wherein the predetermined visible color is yellow.
3. (Amended) The method of claim [A1] 1, wherein the predetermined size is a 12 x 12 matrix.

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